McLaren Hart®
ENVIRONMENTAL ENGINEERING CORPORATION

November 15, 1994

Mr. T. M. Walker, P.E.
Environmental Engineer
Mobil Exploration and Producing U.S. Inc.
10735 South Shoemaker Avenue
Santa Fe Springs, California 90670

RE: LIMITED SUBSURFACE INVESTIGATION OF TETRACHLOROETHYLENE (PCE) IMPACTED SOIL AT MOBIL JALK FEE PROPERTY, SANTA FE SPRINGS, CALIFORNIA (MCLAREN/HART NO. 03.0601382.000)

Dear Mr. Walker:

Enclosed please find four copies of McLaren/Hart's report titled "Limited Subsurface Investigation of Tetrachloroethylene (PCE) Impacted Soil at Mobil Jalk Fee Property, Santa Fe Springs, California". This report summarizes our recent investigation at the above mentioned site.

McLaren/Hart appreciates the opportunity to provide environmental consulting services for Mobil Exploration and Producing U.S. Inc., and we look forward to working with you in the future. If you have any questions, please do not hesitate to contact me at (714) 752-3213 or Tabb Bubier at (714) 752-3204.

Sincerely,

Everett Ferguson, Jr.
Assistant Geoscientist

Tabb W. Bubier
Supervising Geoscientist

Enclosure

G:\M\MOBIL\0601382\JALKCVR.LTR

Prepared by:

McLaren/Hart
16755 Von Karman
Irvine, California 92714-4918

November 15, 1994

LIMITED SUBSURFACE INVESTIGATION OF TETRACHLOROETHYLENE (PCE) IMPACTED SOIL AT MOBIL JALK FEE PROPERTY SANTA FE SPRINGS, CALIFORNIA

Limited Subsurface Investigation

McLaren/Hart Project No. 03.0601382.000

Tetrachloroethylene (PCE) Impacted Soil at Mobil Jalk Fee Property Santa Fe Springs, California

November 15, 1994

Prepared for: **Mobil Exploration and Producing U.S. Inc.**
10735 South Shoemaker Avenue
Santa Fe Springs, California 90670

Prepared by: **McLaren/Hart Environmental Engineering Corporation**
16755 Von Karman Avenue
Irvine, California 92714-4918

Everett Ferguson, Jr.
Assistant Geoscientist

Tabb W. Bubier
Supervising Geoscientist

Hassan Amini, Ph.D., R.G.
Principal Geoscientist

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

McLaren/Hart Environmental Engineering performed a limited environmental investigation at the Mobil Exploration and Producing U.S. Jalk Fee Property located at 10607 Norwalk Boulevard, Santa Fe Springs, California (Figure 1). The work was performed between July 25 and September 2, 1994, in accordance with the workplans entitled *Proposal for Treatment of Soil Containing Perchloroethylene (PCE) and Hydrocarbons at the Jalk Fee Lease, Santa Fe Springs, California (IR93-447)* dated January 19, 1994 and *Change Order Request for Additional Sampling of Soil Containing Tetrachloroethylene (PCE) at the Jalk Fee Lease, Santa Fe Springs, California (IR94-473)* dated August 30, 1994.

The investigation consisted of advancing 18 GeoProbes to obtain and analyze soil samples. The general objective of the environmental investigation was to characterize the distribution of halogenated volatile organic compounds (HVOCs) and petroleum hydrocarbons.

1.1 INVESTIGATION OBJECTIVES

The objectives of the environmental investigation were to:

- Characterize the vertical and lateral distribution of HVOCs, primarily PCE, in the soil.
- Characterize the vertical and lateral distribution of crude oil, represented by total recoverable petroleum hydrocarbons (TRPH), in the soil.

1.2 SITE HISTORY AND DESCRIPTION

During the early 1900's, oil was discovered near the subject site, and shortly after, the area became an active oil field. The subject site consists of 8.8 acres of undeveloped land located in the southwest portion of the oil field. Productivity of the oil field has declined in recent years,

but the field continues to have economic potential. In the past 20 years, some industrial and commercial development has occurred on the periphery of the oil field and has entirely surrounded the subject site.

Currently, the site contains five abandoned and four active oil wells, a small tank battery, and two temporary bioremediation cells. These cells are bioremediating TRPH affected soil from Mobil's Jalk Fee property, DeWenter/Jordan/Green, Baker/Humble, and Well 732-C sites. All work is being performed under the direction of the Regional Water Quality Control Board (RWQCB) - Los Angeles Region.

1.3 PREVIOUS WORK

Prior to McLaren/Hart, Levine-Fricke generated the following reports on the Jalk Fee property:

- *Draft Subsurface Soil Investigation Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California* dated December 6, 1991

- *Draft Remedial Action Plan Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California* dated December 18, 1991

McLaren/Hart's initial proposal was based upon data contained in these documents. According to Levine-Fricke (1991a), the Jalk Fee property has been used for oil production from the 1920s to the present. The current tenant, Hathaway Company, has conducted oil production activities at the site from the early 1980s to the present (Levine-Fricke, 1991b).

Most of the Jalk Fee property is undeveloped land with four active oil wells and a small tank battery. The tank battery is in the northwest corner of the site and contains six above ground tanks. Three of the active oil wells are near the northern property boundary and one well is near the southern boundary. According to Levine-Fricke (1991b), five oil wells have been abandoned on the property and approximately eight former sumps (i.e., mud pits) associated with oil drilling and production have been observed in historic aerial photographs.

According to Levine-Fricke (1991b), a small oil refuse area where metal objects were deposited (referred to as the boneyard area) was located in the southwest portion of the property from

approximately 1920 until 1942. An aboveground storage tank farm was formerly located in the southeast portion of the property in the late 1920s and early 1930s (Levine-Fricke, 1991b).

According to Levine-Fricke (1991b), Woodward-Clyde Consultants (WCC) completed a subsurface investigation at the Jalk Fee property in August, 1988. The investigation included a geophysical survey, surface soil sampling, and a soil boring and sampling program. The study was cancelled by a party other than Mobil prior to completion and only a "partial report" was prepared by WCC. The results were summarized in WCC's report dated September 14, 1988 entitled "Preliminary Investigation Report". WCC reportedly detected what were believed to be solvent odors and vapor discharge from borings in the eastern section of the Site.

According to Levine-Fricke (1991a), during discussions with Mobil it was reported "that the eastern portion of the site was leased at one time to a company that used solvents along that portion of the site." Recent investigations by Mr. Tom Walker, of Mobil, has revealed that the aforementioned leased property was located in the northeast portion of the property. The southern boundary of the leased property was approximately 70 feet north of the PCE impacted area (which is adjacent to the southern boundary of the Jalk Fee property). Additional samples should be collected and analyzed to support the non-detect result from one sample previously collected from this area (Levine-Fricke 1991a). Additionally, per Mr. Walker, the source of Levine-Fricke's information regarding the eastern portion of the site was not from a Mobil representative but rather originated from the current operator (Mr. "Doc" Hathaway) of the Jalk Fee oil wells.

Levine-Fricke (1991b) conducted subsurface investigations at the Jalk Fee property between November 1990 and September 1991. The field investigations included a shallow methane gas survey, the excavation of shallow trenches in the former boneyard and eight former sump areas, and 27 shallow soil borings to depths ranging from 20 to 55 feet below grade. The selection of the trench and soil boring locations were based on information presented in the partial report prepared by WCC, discussions with Mobil personnel familiar with the site, and review of historical aerial photographs. The results from the investigation were presented in Levine-Fricke's (1991a) December 6, 1991, report entitled "Draft Subsurface Soil Investigation, Jalk Fee Property" and briefly summarized in Levine-Fricke's (1991b) December 18, 1991 report entitled "Draft Remedial Action Plan, Jalk Fee Property".

The results from Levine-Fricke's (1991a) subsurface investigation indicated that only 10 of the 21 areas investigated had chemicals in soil. The southeast portion of the Jalk Fee property contained up to 2,500 ppm tetrachloroethylene (PCE) and other chlorinated compounds. Petroleum hydrocarbons up to 29,000 ppm were also detected in soil at this location. Based on the analytical results from soil samples collected from soil boring SB-3, Levine-Fricke (1991a) estimated that PCE-affected soil extends vertically from ground surface to approximately 20 feet below ground surface at this location (Levine-Fricke, 1991a). PCE was also detected in one surface sample obtained along the northern property boundary in the western portion of the site (near SB-17) at a concentration of 0.037 ppm.

Additionally, in a further attempt to identify possible sources of PCE and related compounds at the Jalk Fee site, McLaren/Hart reviewed the files of the southern neighboring property (Continental Heat Treating, Inc.) at the Environmental Compliance Section of the City of Santa Fe Springs. The results of this work are detailed in McLaren/Hart's September 23, 1993 letter entitled "Perchlorethylene (PCE) and Heavy Metals in Soil at the Jalk Lease". In summary, the file contained information indicating that the neighboring facility used PCE. An average volume of 125 gallons and a maximum volume of 250 gallons of PCE were stored per day at the Continental Heat Treating, Inc. facility (February 15, 1993 Hazardous Material Registration Forms).

1.4 HYDROGEOLOGIC SETTING

The Santa Fe Springs Oil Field is located on the Santa Fe Springs plain, which is part of the Montebello Forebay non-pressure area of the Central Basin. Groundwater is found throughout the region under unconfined conditions in the Recent Alluvium and in the underlying Exposition Aquifer. Numerous other aquifers are also present in the area, and are under confined to semi-confined conditions: the Gage, Hollydale, Jefferson, Lynwood, Silverado, and Sunnyside Aquifers. Within the Santa Fe Springs Oil Field, the upper 100 feet of sediments consist predominantly of permeable sands, although the upper 15 feet of sediments have a higher silt and clay content and lower permeability. According to geologic cross-sections presented in California Department of Water Resources (CDWR) Bulletin 104 (1988), the first regional groundwater-bearing zone is the Exposition Aquifer, which is first encountered at approximately 60 feet below grade. The second regional aquifer is the Gage Aquifer, first encountered at approximately 110 feet below ground surface, according to geologic cross-sections presented in CDWR (1988).

The depth to first groundwater in the area of the oil field has generally been reported at approximately 60 feet below grade, although localized perched zones have been encountered as shallow as 13 feet below grade. Information from the Los Angeles County Department of Public Works (LACDPW)-Hydrologic Records section indicates that the depth to water at well number 1625-N (located at the intersection of Telegraph Road and the Southern Pacific Railroad tracks approximately two-thirds of a mile northwest of the Jalk Fee property) was 58 feet below grade on April 30, 1992. The occurrences of groundwater at approximately 60 feet below grade correspond to the top of the saturated portion of the Exposition Aquifer. The regional, horizontal groundwater flow direction in both the Exposition and Gage Aquifers in the Santa Fe Springs Oil Field ranges from the south to southwest.

Although most of the aquifers in the area are separated by aquicludes, the Hollydale and Gage are hydraulically connected approximately 2,000 feet north of the intersection of Telegraph Road and Norwalk Boulevard. Approximately 7,200 feet north of the intersection of Telegraph Road and Norwalk Boulevard, the Hollydale, Jefferson, and Lynwood are also hydraulically connected. There are domestic and commercial water wells screened in the Lynwood and Silverado (250 to 780 feet below grade) throughout the city.

Significant hydrologic features in the area include the San Gabriel River, which flows approximately north-south along the western edge of the city. There are also two extensive water spreading grounds/percolation basins approximately 1 to 2.5 miles northwest of the city limits. These features will act as groundwater recharge, or "mounding" areas, thus inducing groundwater to flow away from them.

Soil at the site consists of interbedded sand, silty sand, sandy silt, silt , and clayey silt in the upper 30 feet. Sandy soils are loose to dense and silty soils are slightly stiff to hard. A very tight, dry, clayey silt is located approximately 15 to 20 below grade and exists throughout most of the investigated area. Perched groundwater was found at 5 to 10 feet below grade in small quantities near the concrete pad.

2.0 FIELD INVESTIGATION

McLaren/Hart's limited subsurface investigation consisted of advancing 18 GeoProbes to obtain and analyze soil samples for the presence for HVOC's and petroleum hydrocarbons. The following sections describe the approach and methods used to complete this investigation.

2.1 APPROACH

McLaren/Hart's comprehensive proposed scope of work included: (1) defining the vertical and lateral extent of PCE in the soil; (2) collecting groundwater samples to determine whether the PCE has migrated to groundwater; (3) preparing a Preliminary Endangerment Assessment/Feasibility Study/Remedial Action Plan; (4) excavating the PCE-containing soil, collecting confirmatory samples, and constructing a combined vapor extraction/aboveground bioremediation system; (5) treatment system monitoring for six months; and (6) preparing quarterly remediation status reports and a final closure report.

McLaren/Hart has completed soil sampling, at the Jalk Fee property, to further define the vertical and lateral extent of PCE in the soil.

2.2 PRE-INVESTIGATION ACTIVITIES

Prior to the soil investigation, several pre-investigation activities were conducted to insure the safety of field personnel and to complete field activities without costly delays. The pre-existing site Health and Safety Plan was updated in accordance with the Code of Federal Regulations (CFR) 1929.10. Review of Mobil underground utility drawings for the Jalk Fee property was conducted and Underground Service Alert (USA) was contacted for field utility verification. McLaren/Hart personnel conducted a utility clearance using a pipe locator and magnetometer to trace underground pipes. McLaren/Hart personnel completed pre-sampling organizational work including gathering field equipment and sampling supplies, instrument calibration, and project

manager scoping review. McLaren/Hart personnel also prepared subcontracts with the GeoProbe company.

2.3 GeoProbe Sampling

Eighteen soil borings were drilled to a depth of at least 30 feet using a GeoProbe to obtain 87 soil samples (Figure 2). Six samples were collected from each location GP-1 thru GP-8 at 5-foot depth intervals from 5 to 30 feet. Four samples were collected from each location GP-9, 10, 11, 13, 14, 17, and 18 at 5, 15, 25, and 30 foot depths, from location GP-12 at 10, 20, 30, and 38 foot depths, and from location GP-15 at 10, 20, 30, and 48 foot depths. Three samples were collected from location GP-16 at 10, 20 and 30 foot depths (Figure 2).

Samples were analyzed for Halogenated Volatile Organic Compounds (HVOCs) using EPA Method 8010 and for Total Recoverable Petroleum Hydrocarbons (TRPH) using EPA Method 418.1. Sampling protocols are included in Appendix A.

3.0 ANALYTICAL RESULTS

A total of six compounds, including HVOCs and TRPH, were detected during the site investigations by Levine-Fricke and McLaren/Hart. Of the five detected halogenated volatile organic compounds (cis-1,2 Dichloroethene, trans-1,2 Dichloroethene, TCE, PCE, and Methylene Chloride), PCE was the most common; it also occurred at the highest concentrations. A summary of analytical results from Levine-Fricke's report is presented in Table 1 and Figure 2. Analytical results from McLaren/Hart's investigation is summarized in Table 2 and Figure 2. The six compounds detected during the site investigations are summarized below. Any analytical results reported in micrograms per kilograms or parts per billion (ppb) have been converted to milligrams per kilograms, or parts per million (ppm). Laboratory data sheets and chain-of-custody forms are included in Appendix B.

3.1 ANALYTICAL RESULTS SUMMARY

- TRPH was detected in concentrations ranging from 4 to 27,000 ppm.
- Methylene Chloride was detected in concentrations ranging from 0.007 to 3.6 ppm.
- Cis-1,2-DCE was detected in concentrations ranging from 0.012 to 2,100 ppm.
- Trans-1,2,-DCE was detected in concentrations ranging from 0.013 to 13 ppm.
- TCE was detected in concentrations ranging from 0.004 to 2,700 ppm.
- PCE was detected in concentrations ranging from 0.002 to 55,000 ppm.

4.0 SUMMARY AND CONCLUSIONS

For reference purposes, a concentration level of ten times the maximum contamination levels (MCLs) for drinking water are being used to identify the extent of HVOC impacted soils. These are not established clean-up level for the site. Appropriate clean-up levels must be negotiated with the applicable regulatory agency.

4.1 HVOC PLUME

HVOCs detected at 5, 10, 15, 20, 25, and 30 feet below grade which exceed ten times the MCLs are shown on figures 3 through 8, respectively. Figures 3 through 8 show detected concentrations at each location for the indicated depth, as well as, the lateral extent of the impacted soil. Locations with no concentrations listed were not sampled at that depth. Since not every GeoProbe location was sampled at each 5 foot interval, if the samples above and below a non-sampled interval were above ten times the MCL, the interval not sampled was assumed to be above ten times the MCL. As illustrated on the figures, the HVOC impacted soil occurs in two distinct areas; near the concrete pad and west of the concrete pad along the fence line.

Based on field observations and analytical results from the current soil investigation at the Jalk Fee property in Santa Fe Springs, California, the following conclusions have been reached:

- Since the impacted soil containing the highest HVOC concentrations are confined to depths shallower than 20 feet, the source of the contamination probably resulted from surface spillage.

- Since normal crude oil production does not involve the use of PCE, it appears that the PCE originated from a non-oil production source.

- Lateral extent of the impacted soil, above ten times the MCL, has been defined at 5, 10, 15, 20, 25, and 30 feet below ground surface.

- Vertical extent of the impacted soil below 30 foot depth has not been defined; PCE was detected in GP-15 at 48 feet (0.31 ppm) and appears to have impacted groundwater in nearby monitoring well MMW-5 at 830 ppm (September 16,1994).

- The source of PCE in the soil along the southern property boundary does not appear to be related to the operations conducted by Mobil on the property. It is probable that the source of PCE is from an off-site source.

4.2 TRPH IMPACTED SOIL

Soils containing TRPH concentrations greater than 1,000 ppm were found at three locations north of the concrete pad and three locations south of the concrete pad (Figure 2). At two locations (T9A-1a and GP-9), elevated TRPH concentrations were detected at 4 and 5 feet below grade, respectively. At the remaining locations (GP-1, GP-7, GP-8, and SB-3), elevated TRPH concentrations were detected at 15 feet below grade (15 feet and 20 feet below grade in GP-1).

Based on field observations and analytical results from the current soil investigation at the Jalk Fee property in Santa Fe Springs, California, the following conclusions have been reached:

- Oil production activities on site has impacted the soils with TRPH compounds near the concrete pad.

- Vertical and lateral extent has been defined as two small surface areas and one small subsurface area at 15 feet below ground surface.

5.0 REFERENCES

California Code of Regulations, Title 22. 1992. Article 66699. Section on Environmental Health.

California Department of Water Resources. 1988. Planned Utilization of the Groundwater Basins of the Coastal Plain of Los Angeles County, Bulletin 104, Appendix A: Ground Water Geology, 181 pp.

Levine-Fricke. 1991a. Draft Subsurface Soil Investigation, Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California. Unpublished report dated December 6, 1991.

Levine-Fricke. 1991b. Draft Remedial Action Plan, Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California. Unpublished report dated December 18, 1991.

Tables

Table 1

Previous Soil Sample Analytical Results (Levine-Fricke, 1991a)
Mobil Exploration and Producing U.S., Jalk Fee Property

Volatile Organic Compounds (VOCs) and
Total Recoverable Petroleum Hydrocarbons (TRPH)

Sample Location	Sample Depth (ft)	EPA Method 8260 (ppm)				EPA Method
		TCE	PCE	cis-1,2-DCE	Methylene Chlorinde	TRPH
T3A-2	Surface Grab Sample	NA	NA			
T3B-10	5	ND	ND			
T9A-1A	4	**10**	**2500**			
T9A-1B	4	ND	**0.32**			
T9B-1	5	ND	ND			
SB-1	11	ND	ND			
SB-1	26	ND	ND			
SB-3	16	**15**	**430**			
SB-3	26	ND	ND			
SB-22	11	NA	NA			
SB-22	26	NA	NA	NA	NA	ND
SB-27	15	ND	ND	**53**	**2***	NA
SB-27	30	ND	ND	0.02	0.03	NA
SS-13	4	ND	**1.3**	ND	ND	140

Historic chlorinated concentrations

TCE = Trichloroethene
PCE = Tetrachloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
ND = None Detected
NA = Not Analyzed
* = also identified in laboratory blank samples
Source: Table 2 and Table 3, Levine-Fricke 1991a

Table 2

Soil Sample Analytical Results
Mobil Exploration and Producing, U.S., Jalk Fee Property

Halogenated Volatile Organic Compounds (HVOCs) and Total Recoverable Petroleum Hydrocarbon (TRPH)

GeoProbe ID	Depth (ft)	EPA Method 8010 (ppm)				EPA Method 418.1 (ppm)
		cis-1,2-DCE	trans-1,2-DCE	TCE	PCE	TRPH
GP-1	5	0.012	BRL	0.015	**0.28**	150
	10	0.052	BRL	**0.12**	0.084	280
	15	**1.2**	BRL	0.046	1.1	**5500**
	20	**4**	BRL	BRL	**0.51**	**27000**
	25	BRL	BRL	BRL	BRL	BRL
	30	0.018	BRL	BRL	BRL	BRL
GP-2	5	BRL	BRL	BRL	**0.83**	160
	10	BRL	BRL	**0.076**	**0.74**	BRL
	15	BRL	BRL	**0.41**	**4.1**	510
	20	0.041	BRL	BRL	BRL	BRL
	25	0.032	BRL	BRL	BRL	BRL
	30	**0.19**	BRL	0.023	BRL	BRL
GP-3	5	BRL	BRL	BRL	**0.12**	BRL
	10	**0.08**	BRL	BRL	BRL	BRL
	15	**0.06**	BRL	BRL	BRL	BRL
	20	0.015	BRL	BRL	BRL	BRL
	25	0.022	BRL	BRL	BRL	BRL
	30	0.018	BRL	BRL	BRL	BRL
GP-4	5	0.016	BRL	BRL	BRL	BRL
	10	0.061	BRL	BRL	BRL	BRL
	15	BRL	BRL	BRL	BRL	BRL
	20	BRL	BRL	BRL	BRL	BRL
	25	**0.23**	BRL	0.018	0.026	BRL
	30	BRL	BRL	BRL	BRL	BRL

Table 2

Soil Sample Analytical Results
Mobil Exploration and Producing, U.S., Jalk Fee Property

Halogenated Volatile Organic Compounds (HVOCs) and Total Recoverable Petroleum Hydrocarbon (TRPH)

GeoProbe ID	Depth (ft)	EPA Method 8010 (ppm)				EPA Method 418.1 (ppm)
		cis-1,2-DCE	trans-1,2-DCE	TCE	PCE	TRPH
GP-5	5	0.022	BRL	BRL	BRL	BRL
	10	0.014	BRL	BRL	BRL	BRL
	15	BRL	BRL	BRL	BRL	BRL
	20	BRL	BRL	BRL	BRL	BRL
	25	0.53	BRL	**0.098**	**0.092**	BRL
	30	0.015	BRL	BRL	BRL	BRL
GP-6	5	**0.23**	BRL	**0.055**	0.045	BRL
	10	0.021	BRL	BRL	BRL	BRL
	15	**2100**	**13**	**2700**	**55000**	750
	20	0.023	BRL	BRL	0.022	BRL
	25	0.12	BRL	0.03	0.026	BRL
	30	0.11	BRL	BRL	BRL	BRL
GP-7	5	BRL	BRL	**0.059**	7	74
	10	**0.073**	BRL	0.018	**0.14**	BRL
	15	BRL	BRL	BRL	0.049	**8000**
	20	BRL	BRL	BRL	BRL	BRL
	25	BRL	BRL	BRL	BRL	BRL
	30	**1.3**	0.014	**0.23**	**0.68**	BRL
GP-8	5	BRL	BRL	BRL	0.034	350
	10	**0.06**	BRL	BRL	**0.17**	120
	15	**0.21**	BRL	BRL	**0.053**	**2800**
	20	BRL	BRL	BRL	BRL	BRL
	25	**0.38**	BRL	0.024	**0.22**	BRL
	30	0.019	BRL	BRL	BRL	BRL

Table 2

Soil Sample Analytical Results
Mobil Exploration and Producing, U.S., Jalk Fee Property

Halogenated Volatile Organic Compounds (HVOCs) and Total Recoverable Petroleum Hydrocarbon (TRPH)

GeoProbe ID	Depth (ft)	EPA Method 8010 (ppm)				EPA Method 418.1 (ppm)
		cis-1,2-DCE	trans-1,2-DCE	TCE	PCE	TRPH
GP-9	5	**0.71**	0.048	**5.3**	**2.7**	**4000**
	15	BRL	BRL	BRL	BRL	66
	25	BRL	BRL	BRL	BRL	BRL
	30	NA	0.039	0.014	0.026	4
GP-10	5	BRL	BRL	BRL	BRL	BRL
	15	0.014	BRL	0.042	**3.5**	680
	25	0.015	BRL	BRL	BRL	BRL
	30	NA	**0.31**	0.032	**0.18**	6
GP-11	5	BRL	BRL	BRL	**1.9**	57
	15	0.026	BRL	BRL	**0.055**	BRL
	25	**0.47**	BRL	0.019	**0.8**	BRL
	30	NA	0.014	BRL	0.002	5
GP-12	10	0.031	BRL	BRL	0.014	BRL
	20	BRL	BRL	BRL	0.016	BRL
	30	**0.31**	BRL	0.027	0.035	BRL
	38	NA	BRL	BRL	BRL	4
GP-13	5	BRL	BRL	BRL	**0.19**	BRL
	15	BRL	BRL	BRL	BRL	BRL
	25	**0.45**	BRL	0.021	**1.7**	BRL
	30	NA	**0.21**	0.026	**0.78**	5
GP-14	5	BRL	BRL	BRL	BRL	BRL
	15	BRL	BRL	BRL	BRL	BRL
	25	0.044	BRL	BRL	0.036	BRL
	30	NA	BRL	BRL	0.007	4

Table 2

Soil Sample Analytical Results
Mobil Exploration and Producing, U.S., Jalk Fee Property

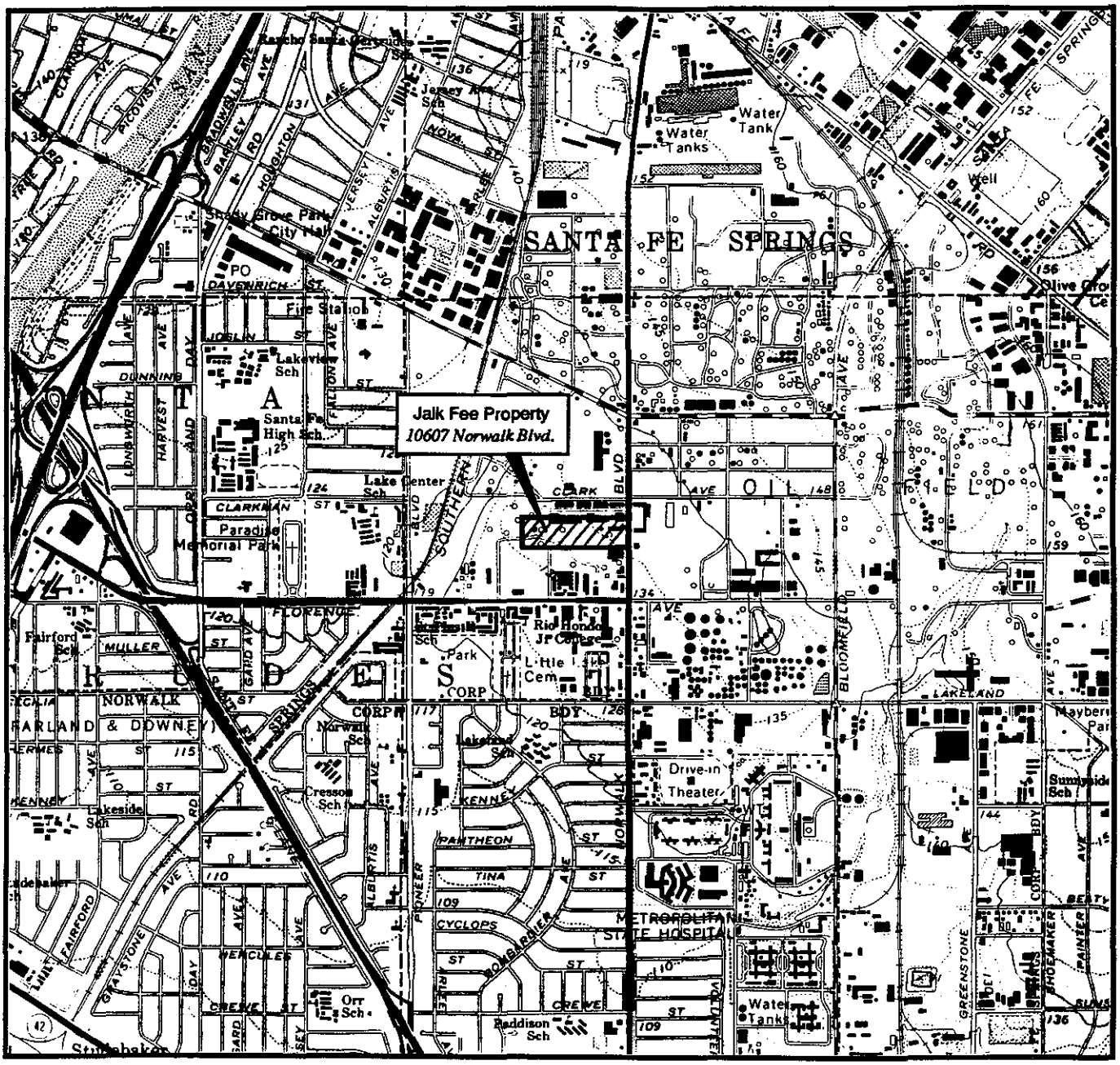
Halogenated Volatile Organic Compounds (HVOCs) and Total Recoverable Petroleum Hydrocarbon (TRPH)

GeoProbe ID	Depth (ft)	EPA Method 8010 (ppm)				EPA Method 418.1 (ppm)
		cis-1,2-DCE	trans-1,2-DCE	TCE	PCE	TRPH
GP-15	10	BRL	BRL	BRL	**27000**	520
	20	BRL	BRL	BRL	**0.25**	BRL
	30	BRL	BRL	BRL	**0.43**	BRL
	48	NA	BRL	BRL	**0.31**	4
GP-16	10	0.015	BRL	BRL	**0.35**	BRL
	20	BRL	BRL	BRL	0.021	BRL
	30	NA	0.049	0.004	**0.29**	6
GP-17	5	BRL	BRL	BRL	0.019	BRL
	15	BRL	BRL	BRL	**0.21**	BRL
	25	BRL	BRL	BRL	**2.9**	BRL
	30	NA	BRL	BRL	**0.24**	3
GP-18	5	BRL	BRL	BRL	BRL	BRL
	15	0.013	BRL	BRL	0.029	BRL
	25	**0.54**	BRL	0.027	**1.3**	BRL
	30	0.031	BRL	BRL	0.032	BRL
SEP-1	6	BRL	BRL	BRL	**2600**	NA
SEP-2	6	BRL	BRL	BRL	**78**	NA

cis-1,2-DCE = cis-1,2 Dichloroethene
trans-1,2-DCE = trans-1,2 Dichloroethene
TCE = Trichloroethene
PCE = Tetrachloroethene
BRL = Below Reporting Limit
NA = Not Analyzed

Figures

FIGURE 1
SITE LOCATION MAP
JALK FEE PROPERTY
SANTA FE SPRINGS, CALIFORNIA



SOURCE: FROM THE USGS MAP. WHITTIER QUADRANGLE, CA.
7.5 MINUTE SERIES (TOPOGRAPHIC MAP) - 1965, PHOTO REVISED 1981

McLaren Hart

Appendix A

Soil Sample Collection Procedures

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
11'	NA	NA	NA	NA	ND
26'	NA	NA	NA	NA	ND

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	0.019	BRL
15'	BRL	BRL	BRL	**0.21**	BRL
25'	BRL	BRL	BRL	**2.9**	BRL
30'	–	BRL	BRL	**0.24**	3

BIO CELL #1

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	BRL	BRL
15'	0.014	BRL	0.042	**3.5**	680
25'	0.015	BRL	BRL	BRL	BRL
30'	–	**0.31**	0.032	**0.18**	6

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	BRL	BRL
15'	0.013	BRL	BRL	0.029	BRL
25'	**0.54**	BRL	0.027	**13**	BRL
30'	0.031	BRL	BRL	0.032	BRL

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	BRL	BRL
15'	BRL	BRL	BRL	BRL	BRL
25'	0.044	BRL	BRL	0.036	BRL
30'	–	BRL	BRL	0.007	4

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	**0.059**	**7**	74
10'	**0.073**	BRL	0.018	**0.14**	BRL
15'	BRL	BRL	BRL	0.049	**8,000**
20'	BRL	BRL	BRL	BRL	BRL
25'	BRL	BRL	BRL	BRL	BRL
30'	**13**	0.014	**0.23**	0.68	BRL

GP-14

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	**0.71**	0.048	**5.3**	**2.7**	**4,000**
15'	BRL	BRL	BRL	BRL	66
25'	BRL	BRL	BRL	BRL	BRL
30'	–	0.039	0.014	0.026	4

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	**0.23**	BRL	**0.055**	0.045	BRL
10'	0.021	BRL	BRL	BRL	BRL
15'	**2,100**	**13**	**2,700**	**55,000**	750
20'	0.023	BRL	BRL	0.022	BRL
25'	**0.12**	BRL	0.03	0.026	BRL
30'	**0.11**	BRL	BRL	BRL	BRL

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
10'	0.031	BRL	BRL	0.014	BRL
20'	BRL	BRL	BRL	0.016	BRL
30'	**0.31**	BRL	0.027	0.035	BRL
38'	–	BRL	BRL	BRL	4

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
16'	**15**	**430**	ND	ND	**6,100**
26'	ND	ND	ND	ND	ND

GP-09

GP-6

GP-12

GP-5

JALK FEE

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	0.022	BRL	BRL	BRL	BRL
10'	0.014	BRL	BRL	BRL	BRL
15'	BRL	BRL	BRL	BRL	BRL
20'	BRL	BRL	BRL	BRL	BRL
25'	**0.53**	BRL	**0.098**	**0.092**	BRL
30'	0.015	BRL	BRL	BRL	BRL

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
5'	ND	ND	ND	ND	**9,900**

GP-10

GP-18

GP-17

GP-7

SB-3

T3B-10

GP-4

PART OF T4

[65.61]
MMW-5

SB-22

T3A-2

CONCRETE PAD

SB-

T9B-1

GP-3

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	0.016	BRL	BRL	BRL	BRL
10'	**0.061**	BRL	BRL	BRL	BRL
15'	BRL	BRL	BRL	BRL	BRL
20'	BRL	BRL	BRL	BRL	BRL
25'	**0.23**	BRL	0.018	0.026	BRL
30'	BRL	BRL	BRL	BRL	BRL

GP-8

SB-27

GP-16

SEP-1

GP-15

SEP-2

GP-13

GP-11

SS13

GP-1

T9A-1b

GP-2

T9A-1a

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
5'	ND	ND	ND	0.007	ND

400

300

200

CONTINENTAL HEAT TREATING

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	**0.12**	BRL
10'	**0.08**	BRL	BRL	BRL	BRL
15'	**0.06**	BRL	BRL	BRL	BRL
20'	0.015	BRL	BRL	BRL	BRL
25'	0.022	BRL	BRL	BRL	BRL
30'	0.018	BRL	BRL	BRL	BRL

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
4'	**10**	**2,500**	**7.5**	**3.6**	**3,600**

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
4'	ND	**0.32**	ND	0.009	29

EQUIPMENT AND REPAIR AREA

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
10'	0.015	BRL	BRL	**0.35**	BRL
20'	BRL	BRL	BRL	0.021	BRL
30'	–	0.049	0.004	**0.29**	6

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
6'	BRL	BRL	BRL	2,600	–

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
10'	BRL	BRL	BRL	**27,000**	520
20'	BRL	BRL	BRL	**0.25**	BRL
30'	BRL	BRL	BRL	**0.43**	BRL
48'	–	BRL	BRL	**0.31**	4

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	**0.19**	BRL
15'	BRL	BRL	BRL	BRL	BRL
25'	**0.45**	BRL	0.021	**1.7**	BRL
30'	–	0.21	0.026	0.78	5

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
6'	BRL	BRL	BRL	78	–

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
G.S.	NA	NA	NA	NA	NA

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	**1.9**	57
15'	0.026	BRL	BRL	**0.055**	BRL
25'	**0.47**	BRL	0.019	**0.8**	BRL
30'	–	0.014	BRL	0.002	5

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
15'	ND	ND	53	2	NA
30'	ND	ND	0.02	0.03	NA

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	0.034	350
10'	**0.06**	BRL	BRL	**0.17**	120
15'	**0.21**	BRL	BRL	**0.053**	**2,800**
20'	BRL	BRL	BRL	BRL	BRL
25'	**0.38**	BRL	0.024	**0.22**	BRL
30'	0.019	BRL	BRL	BRL	BRL

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
4'	ND	1.3	ND	ND	140

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
11'	ND	ND	ND	ND	ND
26'	ND	ND	ND	ND	ND

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	0.012	BRL	0.015	**0.28**	150
10'	0.052	BRL	**0.12**	**0.084**	280
15'	**1.2**	BRL	**0.048**	**1.1**	**5,500**
20'	**4**	BRL	BRL	**0.51**	**27,000**
25'	BRL	BRL	BRL	BRL	BRL
30'	0.018	BRL	BRL	BRL	BRL

1994

LEGEND

PROPERTY LINE	
T4 ———	APPROXIMATE LOCATION OF EXPLORATORY TEST PIT
SB-22 ●	SOIL BORING (Levine-Fricke, December 1991)
MMW-5 ⊕	GROUNDWATER MONITOR WELL LOCATION
[65.61]	DEPTH TO GROUNDWATER IN FEET
500+	SURVEYED MEASURED INTERVALS (100 FOOT)
CHAIN LINK FENCE	
GP-17 ▲	CONTINGENT GEOPROBE (McLaren/Hart, July-September 1994)
GP-14 ▲	GEOPROBE (McLaren/Hart, July-September 1994)

c-1,2-DCE	cis 1,2-Dichloroethene
t-1,2-DCE	trans 1,2-Dichloroethene
TCE	Trichloroethene
PCE	Tetrachloroethene
TRPH	Total Recoverable Petroleum Hydrocarbons
–	Not Analyzed for this Compound
BRL	Below Reporting Limit
ND	Not Detected
NA	Not Analyzed
0.38	Concentration above 10xMCL for for HVOC's or above 1,000 ppm for TRPH
[65.61]	DEPTH TO GROUND WATER IN FEET
Note:	All Concentrations are Reported in parts per million (ppm).

N

0 25'

APPROX. SCALE

NOTE: SITE MAP MODIFIED FROM LEVINE-FRICKE (1991b).

McLaren Hart
16755 VON KARMAN AVENUE, IRVINE, CA 92714
TEL. (714)756-2667 FAX (714) 756-8460

FIGURE 2
GEOPROBE LOCATIONS
MOBIL-JALK FEE LEASE
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CA

DRAWN BY: E. Muresan	DATE: 9-26-94	PROJECT NAME: MOBIL JALK FEE PCE	
CHECKED BY: E. Ferguson	DATE: 10-26-94	PROJECT NUMBER: 03.0601382.000	
APPROVED BY: T. Bubier	DATE: 10-26-94	REVISION DATE: 10-26-94	DRAWING FILE #: C9410003

BIO CELL #1

JALK FEE

PART OF T4

[65.61]
MMW-5

(0.019)
GP-17

GP-16

(2600)
SEP-1

GP-15

(78)
SEP-2

SB-22

(BRL)
GP-18

(BRL)
GP-10

(BRL)
GP-14

(5.3)
GP-09

(0.23)
GP-6

GP-12

(7.0)
GP-7

SB-3

T3A-2

(0.034)
GP-8

SB-27

(0.022)
GP-5

(ND)
T3B-10

(0.016)
GP-4

(ND)
T9B-1

CONCRETE PAD

SB-1

(0.12)
GP-3

(0.32)
T9A-1b

(2500)
T9A-1a

(0.85)
GP-2

(1.19)
GP-13

(1.9)
GP-11

(1.3)
SS13

(0.28)
GP-1

500

400

300

200

EQUIPMENT AND REPAIR AREA

LEGEND

—— – – ——	PROPERTY LINE
T4 ———	APPROXIMATE LOCATION OF EXPLORATORY TEST PIT
SB-22 ●	SOIL BORING (LEVINE-FRICKE, DECEMBER 1991)
MMW-5 ⊕	GROUNDWATER MONITOR WELL LOCATION
[65.61]	DEPTH TO GROUNDWATER IN FEET
500+	SURVEYED MEASURED INTERVALS (100 FOOT)
——+——+——	CHAIN LINK FENCE
GP-17 ▲	CONTINGENT GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
GP-14 ▲	GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
(78)	CONCENTRATION OF HIGHEST DETECTED SOLVENT COMPOUND
	SOLVENT PLUME CONCENTRATION > MCL X 10
BRL	BELOW REPORTING LIMITS
ND	NOT DETECTED
Note:	All Concentrations are Reported in parts per million (ppm).

N

0 25'

APPROX. SCALE

NOTES: SITE MAP MODIFIED FROM LEVINE-FRICKE (1991b).

CONTINENTAL HEAT TREATING

McLaren Hart
16755 VON KARMAN AVENUE, IRVINE, CA 92714
TEL. (714)756-2667 FAX (714) 756-8460

FIGURE 3
HALOGENATED VOLATILE ORGANIC COMPOUND PLUME
JALK FEE
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CA

DRAWN BY: E.M.	DATE: 9-26-94		PROJECT NAME:
REVISED BY: V.B.	DATE: 10-26-94		MOBIL JALK FEE PCE
CHECKED BY: E. Ferguson	DATE: 10-26-94		PROJECT NUMBER: 03.0601382.000
APPROVED BY: T. Bubier	DATE: 10-26-94	REVISION DATE: 10-26-94	DRAWING FILE #: FIG3

BIO CELL #1

JALK FEE

PART OF T4

GP-14

GP-09

(0.02i) GP-6

(0.014) GP-12

(0.014) GP-5

GP-10

(0.14) GP-7

T3B-10

(0.061) GP-4

SB-3

T3A-2

SB-22

GP-18

GP-17

[65.61] MMW-5

(0.17) GP-8

CONCRETE PAD (ND)

T9B-1

SB-1

(0.08) GP-3

(0.35) GP-16

SEP-1

(27000) GP-15

SEP-2

SB-27

T9A-1b

T9A-1a

GP-13

GP-11

SS13

(0.12) GP-1

(0.74) GP-2

500

400

300

200

EQUIPMENT AND REPAIR AREA

CONTINENTAL HEAT TREATING

LEGEND

—— – – ——	PROPERTY LINE
T4 ———	APPROXIMATE LOCATION OF EXPLORATORY TEST PIT
SB-22 ●	SOIL BORING (LEVINE-FRICKE, DECEMBER 1991)
MMW-5 ⊕	GROUNDWATER MONITOR WELL LOCATION
[65.61]	DEPTH TO GROUNDWATER IN FEET
500+	SURVEYED MEASURED INTERVALS (100 FOOT)
—+—+—+—	CHAIN LINK FENCE
GP-17 ▲	CONTINGENT GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
GP-14 ▲	GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
(0.35)	CONCENTRATION OF HIGHEST DETECTED SOLVENT COMPOUND
	SOLVENT PLUME CONCENTRATION > MCL X 10
ND	NOT DETECTED
Note:	All Concentrations are Reported in parts per million (ppm).

N

0 25'

APPROX. SCALE

NOTES: SITE MAP MODIFIED FROM LEVINE-FRICKE (1991b).

McLaren Hart
16755 VON KARMAN AVENUE, IRVINE, CA 92714
TEL. (714)756-2687 FAX (714) 756-8460

FIGURE 4
HALOGENATED VOLATILE ORGANIC COMPOUND PLUME AT 10 FEET BELOW GROUND SURFACE
MOBIL-JALK FEE LEASE
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CA

DRAWN BY: E.M.	DATE: 9-26-94	PROJECT NAME:	
REVISED BY: V.B.	DATE: 10-26-94	MOBIL JALK FEE PCE	
CHECKED BY: E. Ferguson	DATE: 10-26-94	PROJECT NUMBER: 03.0601382.000	
APPROVED BY: T. Bubier	DATE: 10-26-94	REVISION DATE: 10-26-94	DRAWING FILE #: FIG4

BIO CELL #1

JALK FEE

PART OF T4

[65.61]
MMW-5

GP-16

SEP-1

GP-15

SEP-2

(0.21)
GP-17

SB-22

(0.029)
GP-18

(BRL)
GP-13

(BRL)
GP-14

(BRL)
GP-09

(55,000)
GP-6

(3.5)
GP-10

GP-12

(0.049)
GP-7

(4.30)
SB-3

T3B-10

(BRL)
GP-5

(BRL)
GP-4

T3A-2

CONCRETE PAD

T9B-1

SB-1

(0.21)
GP-8

(53)
SB-27

(0.06)
GP-3

(0.055)
GP-11

SS13

T9A-1b

T9A-1a

(1.2)
GP-1

(4.1)
GP-2

500

400

300

200

EQUIPMENT AND REPAIR AREA

CONTINENTAL HEAT TREATING

LEGEND

—— – – – ——	PROPERTY LINE
T-4 ———	APPROXIMATE LOCATION OF EXPLORATORY TEST PIT
SB-22 ●	SOIL BORING (LEVINE-FRICKE, DECEMBER 1991)
MMW-5 ⊕	GROUNDWATER MONITOR WELL LOCATION
[65.61]	DEPTH TO GROUNDWATER IN FEET
500+	SURVEYED MEASURED INTERVALS (100 FOOT)
—×—×—×—	CHAIN LINK FENCE
GP-17 ▲	CONTINGENT GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
GP-14 ▲	GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
(0.21)	CONCENTRATION OF HIGHEST DETECTED SOLVENT COMPOUND
	SOLVENT PLUME CONCENTRATION > MCL X 10
BRL	BELOW REPORTING LIMIT
Note:	All Concentrations are Reported in parts per million (ppm).

N

0 25'

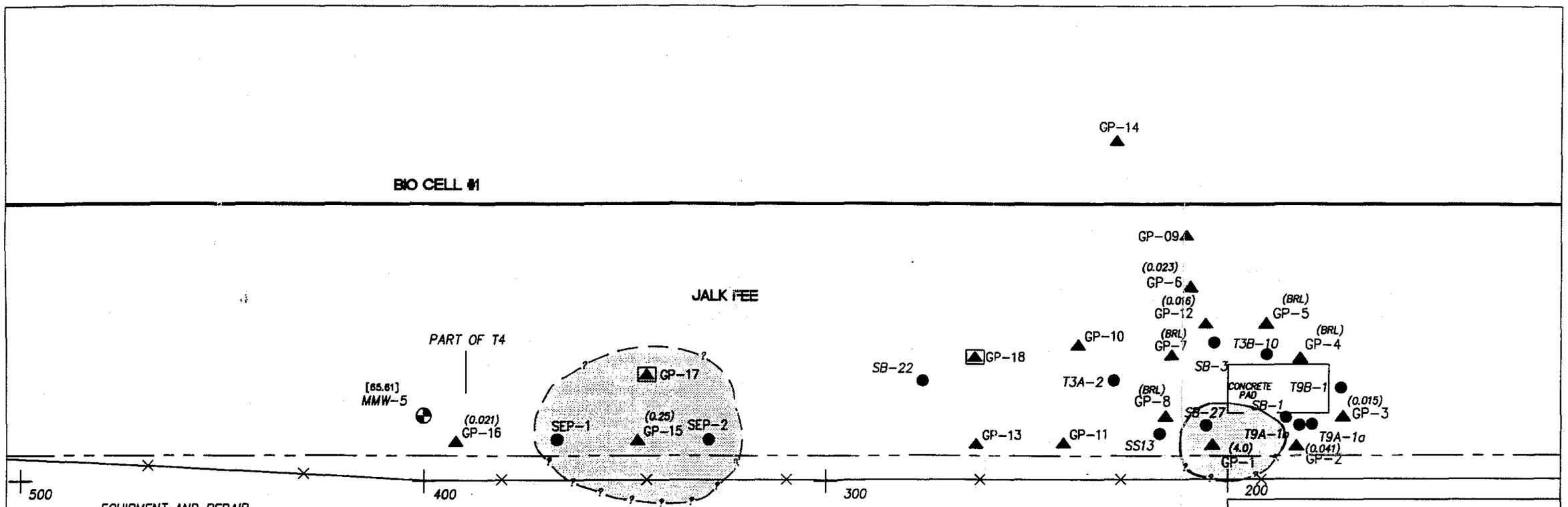
APPROX. SCALE

NOTES: SITE MAP MODIFIED FROM LEVINE-FRICKE (1991b).

McLaren Hart
16755 VON KARMAN AVENUE, IRVINE, CA 92714
TEL. (714)756-2667 FAX (714) 756-8460

FIGURE 5
HALOGENATED VOLATILE ORGANIC COMPOUND PLUME AT 15 FEET BELOW GROUND SURFACE
MOBIL-JALK FEE LEASE
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CA

DRAWN BY: E.M.	DATE: 9-26-94	PROJECT NAME:	
REVISED BY: V.B.	DATE: 10-26-94	MOBIL JALK FEE PCE	
CHECKED BY: E. Ferguson	DATE: 10-26-94	PROJECT NUMBER: 03.0601382.000	
APPROVED BY: T. Bubier	DATE: 10-26-94	REVISION DATE: 10-26-94	DRAWING FILE #: FIG5



LEGEND

———	PROPERTY LINE
T4 ———	APPROXIMATE LOCATION OF EXPLORATORY TEST PIT
SB-22 ●	SOIL BORING (LEVINE-FRICKE, DECEMBER 1991)
MMW-5 ⊕	GROUNDWATER MONITOR WELL LOCATION
[65.61]	DEPTH TO GROUNDWATER IN FEET
500+	SURVEYED MEASURED INTERVALS (100 FOOT)
———×———×———	CHAIN LINK FENCE
GP-17 ▲	CONTINGENT GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
GP-14 ▲	GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
(0.25)	CONCENTRATION OF HIGHEST DETECTED SOLVENT COMPOUND
	SOLVENT PLUME CONCENTRATION > MCL X 10
BRL	BELOW REPORTING LIMITS
Note:	All Concentrations are Reported in parts per million (ppm).

N

0 25'

APPROX. SCALE

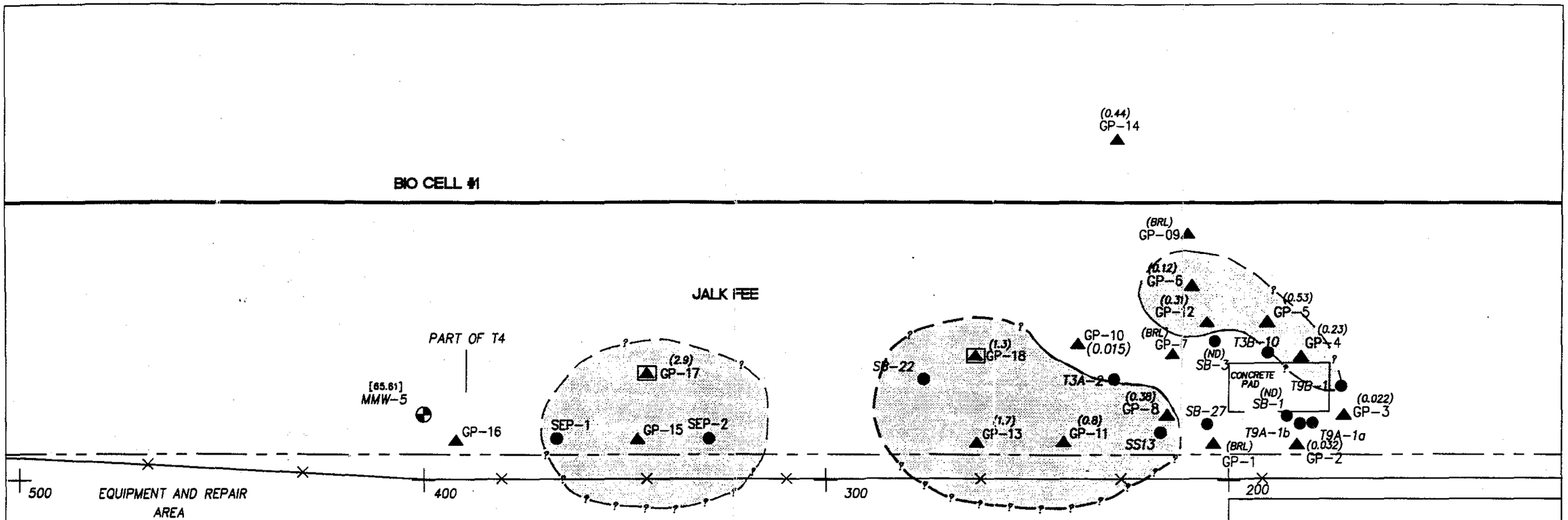
NOTES: SITE MAP MODIFIED FROM LEVINE-FRICKE (1991b).

CONTINENTAL HEAT TREATING

McLaren Hart
16755 VON KARMAN AVENUE, IRVINE, CA 92714
TEL. (714)756-2657 FAX (714) 756-8460

FIGURE 6
HALOGENATED VOLATILE ORGANIC COMPOUND PLUME AT 20 FEET BELOW GROUND SURFACE
MOBIL-JALK FEE LEASE
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CA

DRAWN BY: E.M.	DATE: 9-26-94	PROJECT NAME:	
REVISED BY: V.B.	DATE: 10-26-94	MOBIL JALK FEE PCE	
CHECKED BY: E. Ferguson	DATE: 10-26-94	PROJECT NUMBER:	03.0601382.000
APPROVED BY: T. Bubier	DATE: 10-26-94	REVISION DATE: 10-26-94	DRAWING FILE #: FIG6



LEGEND

— — — —	PROPERTY LINE
T4 ———	APPROXIMATE LOCATION OF EXPLORATORY TEST PIT
SB-22 ●	SOIL BORING (LEVINE-FRICKE, DECEMBER 1991)
MMW-5 ⊕	GROUNDWATER MONITOR WELL LOCATION
[65.61]	DEPTH TO GROUNDWATER IN FEET
500+	SURVEYED MEASURED INTERVALS (100 FOOT)
——×——×——	CHAIN LINK FENCE
GP-17 ▲	CONTINGENT GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
GP-14 ▲	GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
(1.7)	CONCENTRATION OF HIGHEST DETECTED SOLVENT COMPOUND
	SOLVENT PLUME CONCENTRATION > MCL X 10
BRL	BELOW REPORTING LIMITS
ND	NOT DETECTED
Note:	All Concentrations are Reported in parts per million (ppm).

N

0 25'

APPROX. SCALE

NOTES: SITE MAP MODIFIED FROM LEVINE-FRICKE (1991b).

McLaren Hart
16755 VON KARMAN AVENUE, IRVINE, CA 92714
TEL. (714)756-2667 FAX (714) 756-8460

FIGURE 7
HALOGENATED VOLATILE ORGANIC COMPOUND PLUME AT 25 FEET BELOW GROUND SURFACE
MOBIL-JALK FEE LEASE
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CA

DRAWN BY: E.M.	DATE: 9-26-94		PROJECT NAME:
REVISED BY: V.B.	DATE: 10-26-94		MOBIL JALK FEE PCE
CHECKED BY: E. Ferguson	DATE: 10-26-94		PROJECT NUMBER: 03.0601382.000
APPROVED BY: T. Bubier	DATE: 10-26-94	REVISION DATE: 10-26-94	DRAWING FILE #: FIG7

BIO CELL #1

JALK FEE

PART OF T4

[65.61]
MMW-5

GP-17

(0.29)
GP-16

SEP-1

(0.43)
GP-15

SEP-2

(0.007)
GP-14

(0.039)
GP-09

(0.11)
GP-5

(BRL)
GP-12

(0.31)
GP-10

(0.032)
GP-18

SB-22

T3A-2

(0.019)
GP-8

(0.78)
GP-13

(0.780)
GP-11

SS13

SB-3

(0.015)
GP-5

T3B-10

(BRL)
GP-4

CONCRETE PAD

T9B-1

SB-1

(0.03)
SB-27

(0.018)
GP-3

T9A-1b

T9A-1a

(0.018)
GP-1

(0.19)
GP-2

500

400

300

200

EQUIPMENT AND REPAIR AREA

CONTINENTAL HEAT TREATING

LEGEND

—— – – ——	PROPERTY LINE
T4 ———	APPROXIMATE LOCATION OF EXPLORATORY TEST PIT
SB-22 ●	SOIL BORING (LEVINE-FRICKE, DECEMBER 1991)
MMW-5 ⊕	GROUNDWATER MONITOR WELL LOCATION
[65.61]	DEPTH TO GROUNDWATER IN FEET
500+	SURVEYED MEASURED INTERVALS (100 FOOT)
——×——×——	CHAIN LINK FENCE
GP-17 ▲	CONTINGENT GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
GP-14 ▲	GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
(0.31)	CONCENTRATION OF HIGHEST DETECTED SOLVENT COMPOUND
	SOLVENT PLUME CONCENTRATION > MCL X 10
BRL	BELOW REPORTING LIMITS
Note:	All Concentrations are Reported in parts per million (ppm).

N

0 25'

APPROX. SCALE

NOTES: SITE MAP MODIFIED FROM LEVINE-FRICKE (1991b).

McLAREN/HART
16755 VON KARMAN AVENUE, IRVINE, CA 92714
TEL. (714)756-2567 FAX (714) 756-8460

FIGURE 8
HALOGENATED VOLATILE ORGANIC COMPOUND PLUME AT 30 FEET BELOW GROUND SURFACE
MOBIL-JALK FEE LEASE
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CA

DRAWN BY: E.M.	DATE: 9-28-94	PROJECT NAME:	
REVISED BY: V.B.	DATE: 10-26-94	MOBIL JALK FEE PCE	
CHECKED BY: E. Ferguson	DATE: 10-26-94	PROJECT NUMBER:	03.0601382.000
APPROVED BY: T. Bubier	DATE: 10-26-94	REVISION DATE: 10-26-94	DRAWING FILE #: FIG8

SOIL SAMPLE COLLECTION PROCEDURES

A GeoProbe is a hydraulic ram-type device which can obtain soil samples in situ without generating soil cuttings. A GeoProbe is a truck-mounted hydraulically operated sampling unit designed to collect soil, soil gas, and groundwater samples at discrete depths. As no soil cuttings are generated during GeoProbe sampling, no cuttings require containerization, characterization and off-site disposal. The principal advantages of this sampling device are its ability to obtain truly undisturbed samples and the elimination of disposal costs.

Prior to sampling and between samples, all reusable sampling equipment is decontaminated by washing in a solution of trisodium phosphate and water. The equipment is then double rinsed first in tap water, then in distilled water.

Soil samples are obtained by driving a two-foot long, brass tube lined, stainless steel sampling tube equipped with an internal, moveable piston to a position just above the desired sampling depth. After the tube is properly positioned, the internal piston is released and the tube driven an additional twenty-four inches, allowing the soil to enter the tube. The sampling tube was then withdrawn and the soil sample removed from the tube within the brass tube liner. GeoProbe borings are backfilled using bentonite chips.

The lowermost tube from each sampled interval is trimmed of excess soil, sealed with squares of teflon sheeting, plastic end caps, and waterproof tape, labeled, and stored on ice in a thermally insulated ice chest. A sample label is attached to each sample tube identifying the date the sample was collected, a unique identification number, and other identifying information. Samples are couriered or shipped under chain-of-custody procedures to a State-certified hazardous waste testing laboratory for analysis.

Chain-of-custody procedures were completed to track the possession and handling of the soil samples from the time the samples were collected in the field through the laboratory analysis. Chain-of-custody documentation consisted of a chain-of-custody record that listed the boring number, sample number, sample depth, field staff responsible for the sample collection and shipment, courier and laboratory staff responsible for the receipt, date and time of sample collection and sample receipt, requested analyses, and type and number of sample containers. A copy of the chain-of-custody form was retained by the field personnel prior to shipment and upon relinquishing samples to the courier for submittal to the analytical laboratory.